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TOWN OF
MEAFORD

WATER POLLUTION CONTROL PLANT and
WATER TREATMENT PLANT

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MEAFORD

WATER POLLUTION CONTROL PLANT
and

WATER TREATMENT PLANT

operated for

THE TOWN OF MEAFORD

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

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WATER TREATMENT PLANT

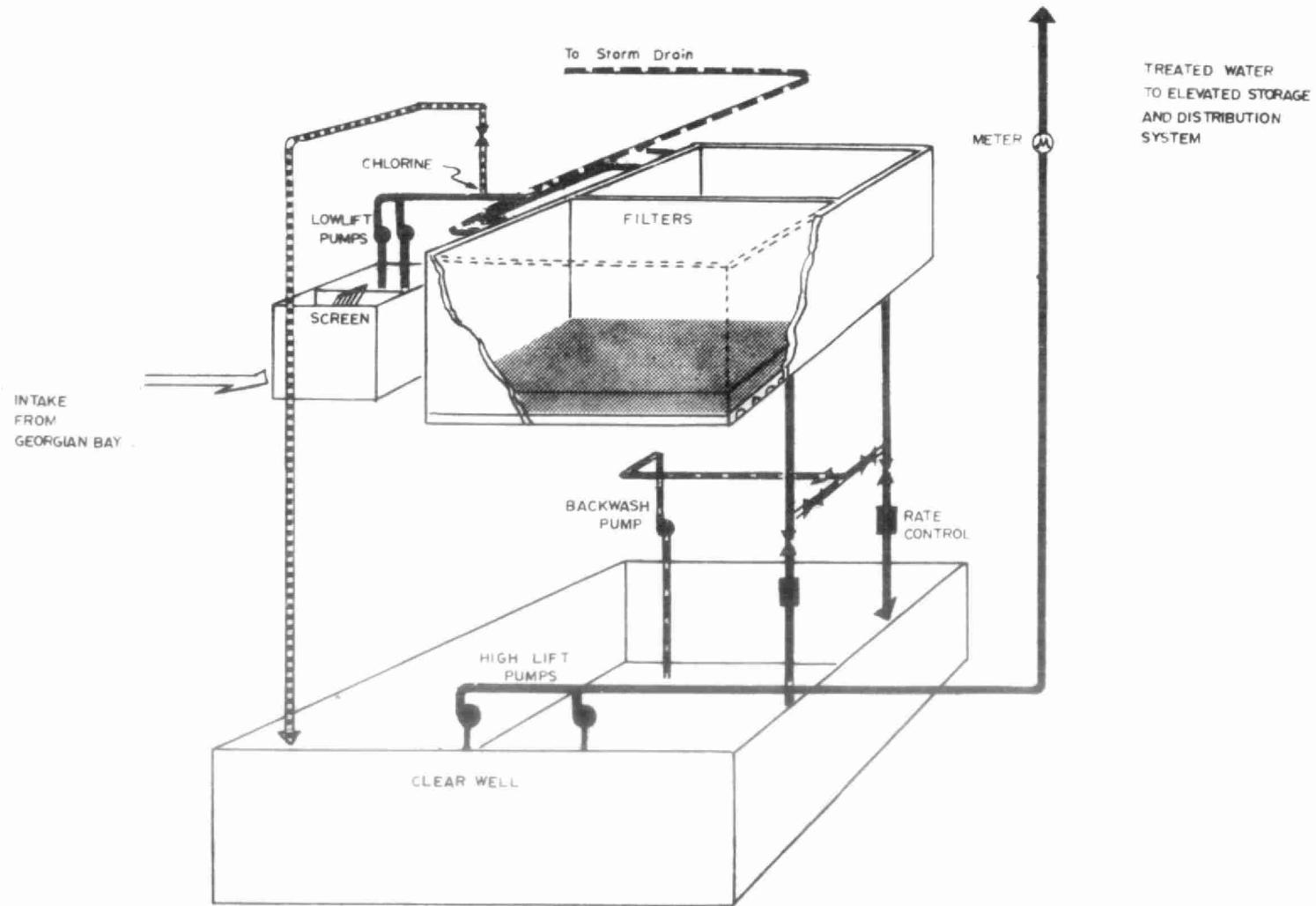
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WATER POLLUTION CONTROL PLANT

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WATER TREATMENT PLANT

TOWN OF MEAFORD WTP



DESIGN DATA

PROJECT Town of Meaford WTP

PROJECT NO. 6-0029-59

DESIGN CAPACITY 2.88 mgd

CAPACITY OF UNITS

Low Lift - Two 3 mgd @ 55'
Filters - 2.88 mgd @ 1.7 gpm/ft²

High Lift - One 2.0 mgd @ 172'
One 2.7 mgd @ 187'

FILTER

Type: Graded Anthrafilt
Size: Two 25' x 25'
Surface Wash: Palmer

CLEARWELL

Capacity: 200,000 gal.

HIGH LIFT PUMPS

#1 H. L. Pump
Type: Fairbanks-Morse
Size: One 1170 gpm @ 172'

#2 H. L. Pump
Type: DeLaval
Size: 2000 gpm @ 180'
Auxilliary Power: GMC Diesel

BACKWASH PUMP

Type: Fairbanks-Morse
Size: One 6500 gpm @ 38'

RAW WATER SOURCE

Nottawasaga Bay

INTAKE

- depth about 22 ft.
- 877' of 30" pipe

SCREENING

Chamber Size: 15' x 5' x 14'
Screens: Two 5' x 11'

LOW LIFT PUMPS

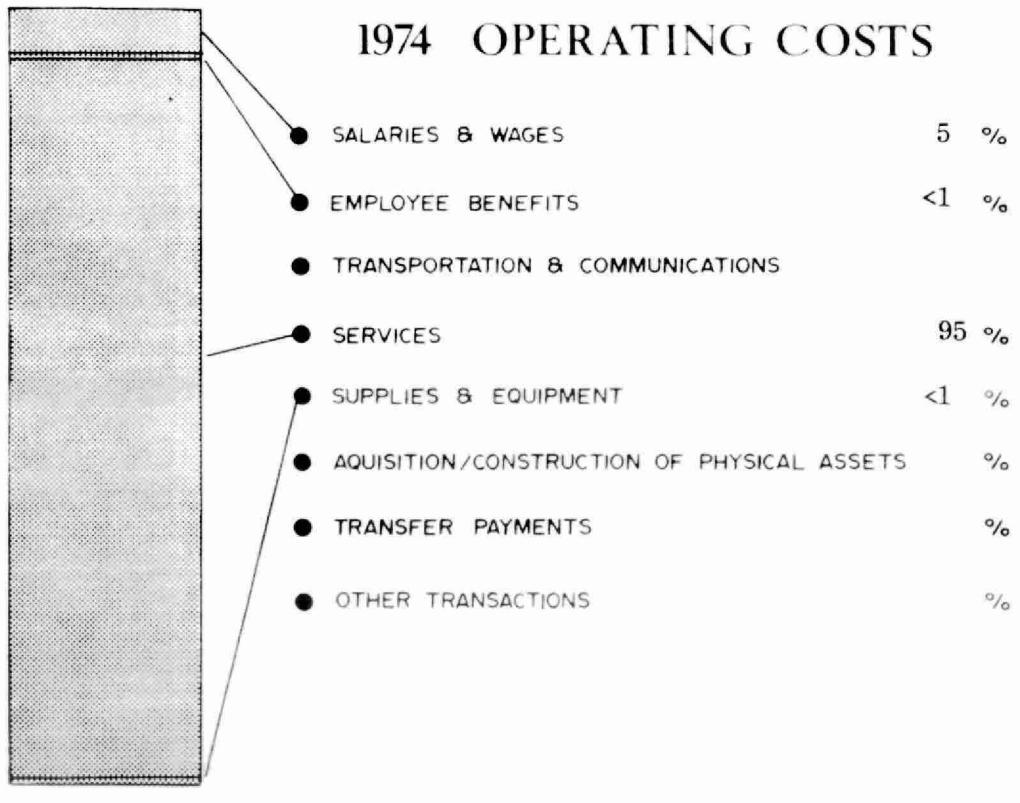
Type: Fairbanks-Morse vertical turbine
Size: Two 2100 gpm @ 55'

Auxilliary Power: Chrysler Industrial
Engine (on #2 L. L. pump)

CHLORINATOR

Type: F-P gas
Size: One 40 lb/day

ANNUAL COSTS



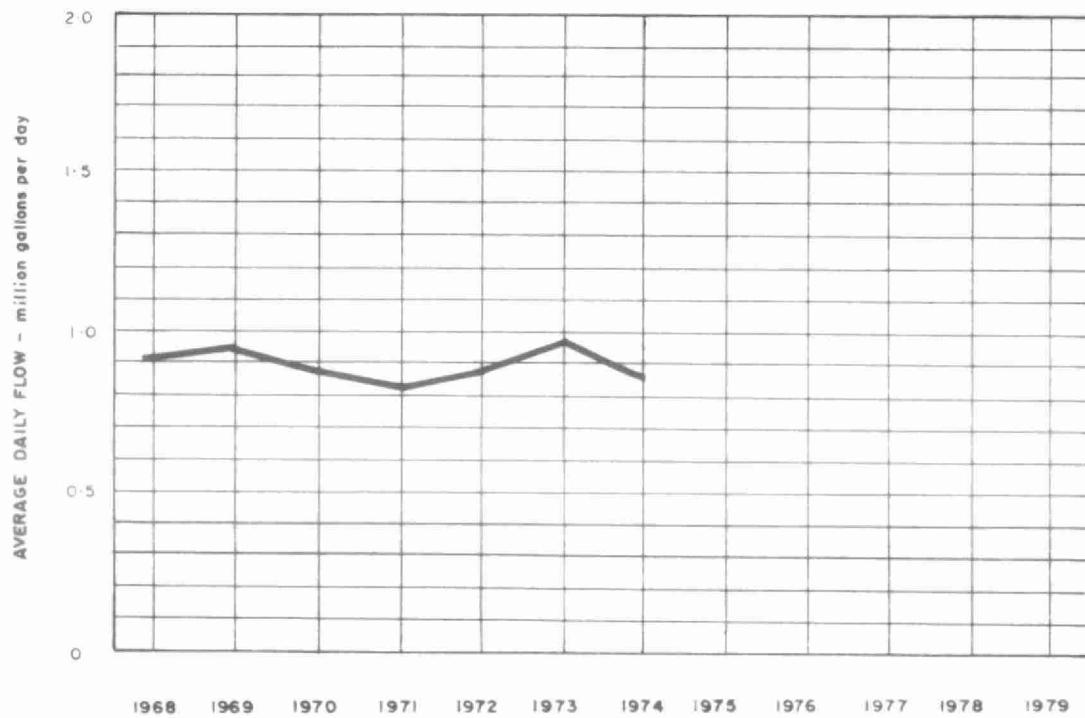
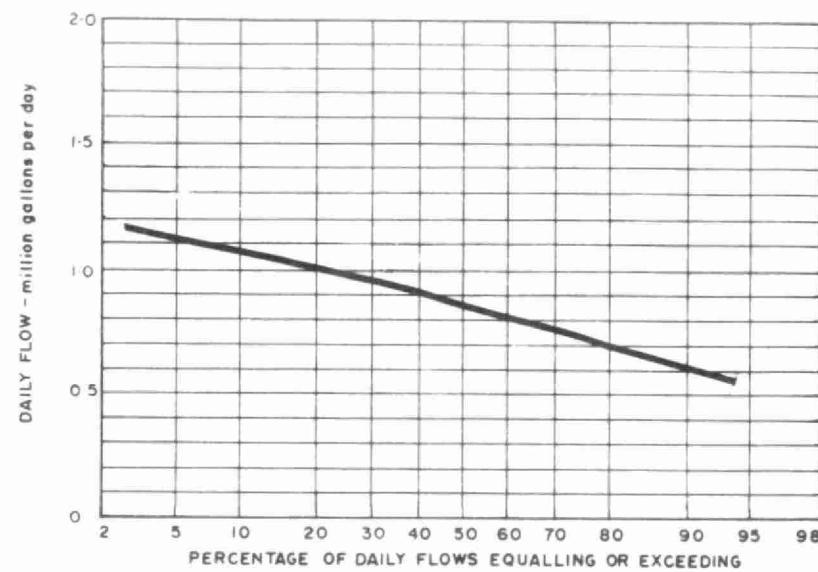
YEARLY OPERATING COSTS

YEAR	WATER TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS
			cents per 1000 gal
1969	339	19,894	5
1970	323	19,491	6
1971	321	19,576	6
1972	321	19,764	6
1973	349	18,460	5
1974	320	25,022	8

OPERATING EXPENDITURES

Regular Staff	\$ <u> </u>	\$ <u> </u>
Casual (Unclassified) Staff	<u>1,195</u>	<u> </u>
TOTAL SALARIES AND WAGES	<u>1,195</u>	<u> </u>
TOTAL EMPLOYEE BENEFITS	<u>34</u>	<u> </u>
TOTAL TRANSPORTATION AND COMMUNICATIONS		<u> </u>
Insurance	<u>970</u>	
Sludge Haulage		<u> </u>
Repairs and Maintenance	<u>18,364</u>	
Other Services	<u>4,417</u>	
TOTAL SERVICES	<u>23,751</u>	<u> </u>
Machinery and Equipment		<u> </u>
Chemicals		<u> </u>
Utilities		<u> </u>
Other Supplies and Equipment	<u>42</u>	
TOTAL SUPPLIES AND EQUIPMENT	<u>42</u>	<u> </u>
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		<u> </u>
TOTAL TRANSFER PAYMENTS		<u> </u>
OTHER TRANSACTIONS		<u> </u>
GRAND TOTAL	GRAND TOTAL	<u>\$ 25,022</u>

PROCESS DATA FLOWS



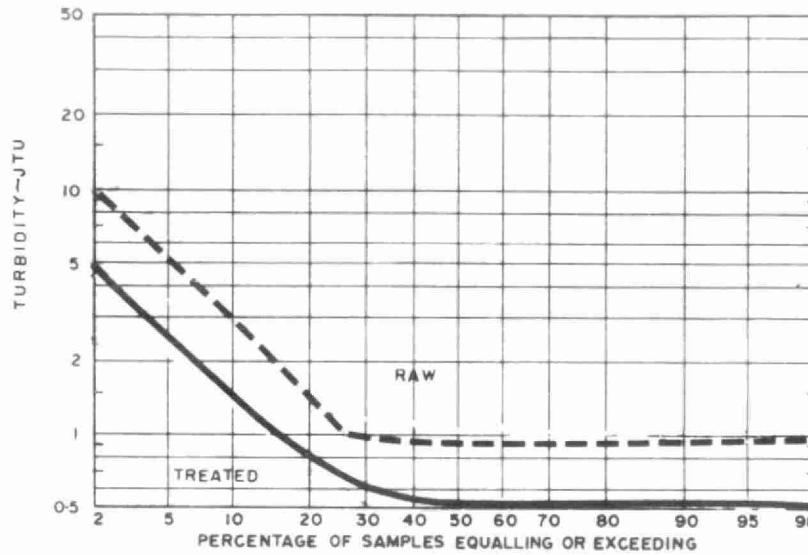
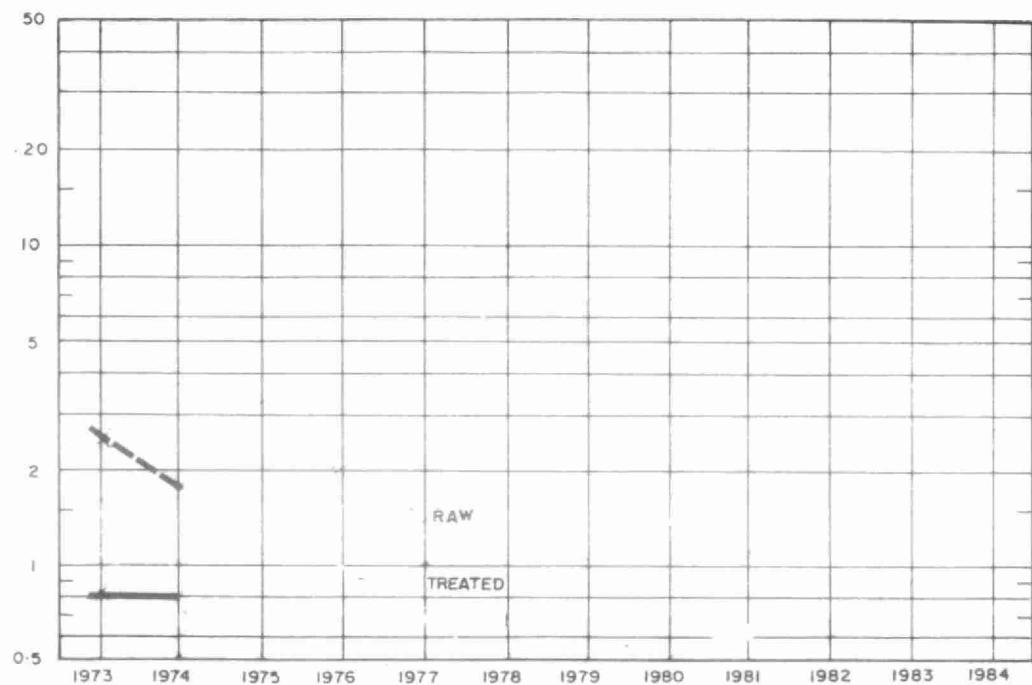
DESIGN CAPACITY 2.9 MGD

PLANT PERFORMANCE

MONTH	FLOWS				RAW WATER		TREATED WATER					
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	MAXIMUM RATE mgd	TURBIDITY (AVERAGE) FTU	COLOUR (AVERAGE) App. units	TURBIDITY		COLOUR		TEMPERATURE	
							AVERAGE FTU	MAXIMUM FTU	AVERAGE App. units	MAXIMUM App. units	AVERAGE °F	MAXIMUM °F
JAN	28.14	.91	1.07	2.02	1.7		.8	5.2			31	31
FEB	26.00	.93	1.12	2.02	2.4		1.2	10.0			31	31
MAR	28.07	.90	1.06	2.02	3.6		1.5	7.4	<5	<5	32	33
APR	27.64	.92	1.08	2.02	2.2		1.1	7.9			33	36
MAY	28.25	.91	1.10		1.5		.8	2.5			38	41
JUNE	29.28	.98	1.32		1.0		.5	.6			43	50
JULY	34.57	1.12	1.56		1.2		.6	1.1			59	64
AUG	29.32	.95	1.36		1.0		.5	8.0			66	68
SEPT	22.92	.76	.93		1.1		.5	1.1			60	67
OCT	22.80	.73	.86		1.5		.7	4.3			51	56
NOV	21.57	.72	.83		1.6		.7	3.9			46	49
DEC	20.95	.68	.79		1.6		.8	3.6			39	41
TOTAL	319.51											
AVG.		.88	1.56	MAXIMUM	1.7		.8	10.0	<5	<5	44	68

TURBIDITY

TURBIDITY-JTU



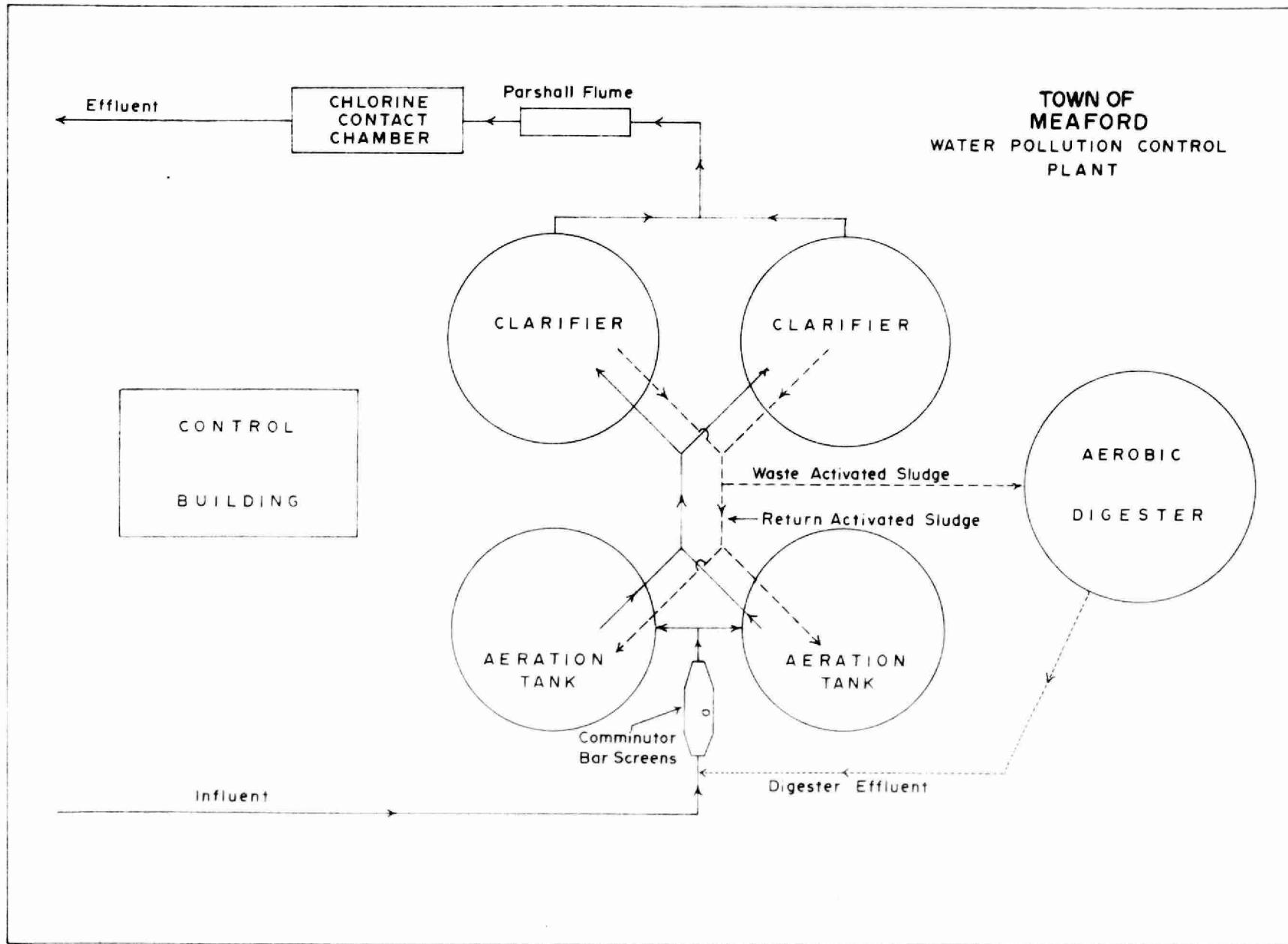
CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
	0	1 - 3	4 - 32	33 - 320	> 320						PRE - mg/l	POST - mg/l	
JAN	0	1	0	1	1	7	0	6	0	302		1.0	.4
FEB	1	0	2	1	0	7	0	8	0	287		1.1	.4
MAR	1	1	0	1	0	7	0	6	0	310		1.1	.4
APR	1	2	1	0	0	8	0	8	0	297		1.1	.4
MAY	1	0	1	1	0	3	0	6	0	295		1.1	.4
JUNE	3	0	1	0	0	4	0	8	0	309		1.1	.3
JULY	4	1	0	0	0	5	0	10	0	356		1.0	.3
AUG	1	1	1	1	0	4	0	8	0	319		1.1	.3
SEPT	0	1	3	0	0	4	0	8	0	288		1.2	.3
OCT	1	0	1	2	0	4	0	8	0	276		1.2	.3
NOV	1	0	1	1	1	4	0	8	0	247		1.1	.3
DEC	0	0	0	4	0	4	0	8	0	230		1.1	.3
TOTAL	14	7	11	12	2	61	0	92	0	3516			
Avg.			8	(NOTE - Average shown is the GEOMETRIC MEAN)						10 pounds per day		1.1	.4

WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as CaCO ₃	2	90	100	80	2	92	100	84	80 - 100
ALKALINITY in mg/l as CaCO ₃	2	72	72	72	2	70	71	70	30 - 100
IRON in mg/l Fe	2	.23	.45	<.05	2	<.05	.05	<.05	Less than 0.3
CHLORIDE in mg/l Cl ⁻	2	5	6	5	2	6	6	6	Less than 250
pH in pH units	2	8.0	8.2	7.8	2	7.9	8.1	7.7	7.0 - 8.5

WATER POLLUTION CONTROL PLANT



DESIGN DATA

PROJECT Town of Meaford WPCP

PROJECT NO. 1-0003-66

TREATMENT High Rate Activated Sludge

DESIGN FLOW 0.86 mgd

COMMINUTOR

Type: Condux type 400
Max. Capacity - 2.58 mgd

AEROBIC DIGESTER

Dimensions: 50'0" dia x 18'6" avg swd.
Capacity: 227,000 I.G.
Aerator: 1 at 50 rpm

AERATION TANKS

2 tanks, each 30'0" dia x 19'3" swd
Capacity: 170,000 I.G. total
Detention: 4.7 hours

Aerators

Type: 2 mechanical Ames-Crosta
driven by 50 hp electric motors

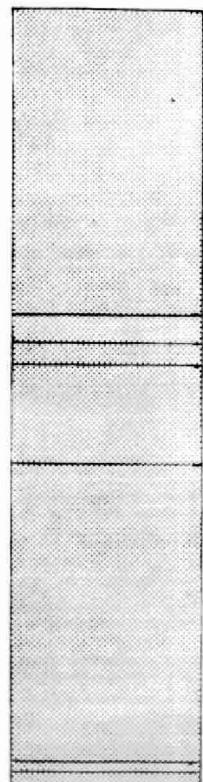
SECONDARY CLARIFIER

2 clarifiers 40'0" dia x 10'9" avg. swd
Capacity: 168,000 I.G. total
Detention: 4.7 hours
Loading: Surface 340 gal/ft²/day
Return Sludge Pumps: 2, 720 IGPM
@ 30' tdh

CHLORINE CONTACT CHAMBER

Size: 24' x 8' x 6' 6", 8400 gallons
Detention Time: 14 min.

ANNUAL COSTS



1974 OPERATING COSTS

- SALARIES & WAGES 38 %
- EMPLOYEE BENEFITS 4 %
- TRANSPORTATION & COMMUNICATIONS 3 %
- SERVICES 13 %
- SUPPLIES & EQUIPMENT 39 %
- AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS 1 %
- TRANSFER PAYMENTS 2 %
- OTHER TRANSACTIONS 2 %

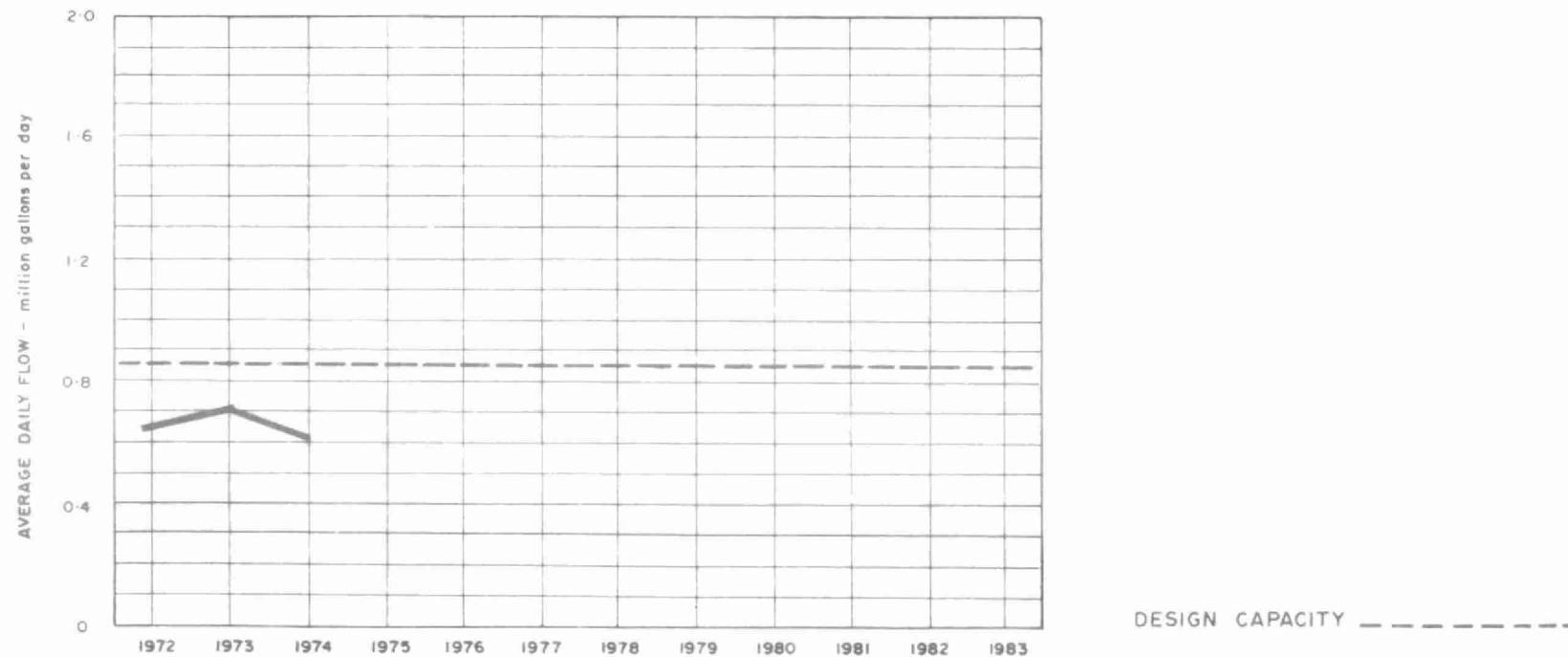
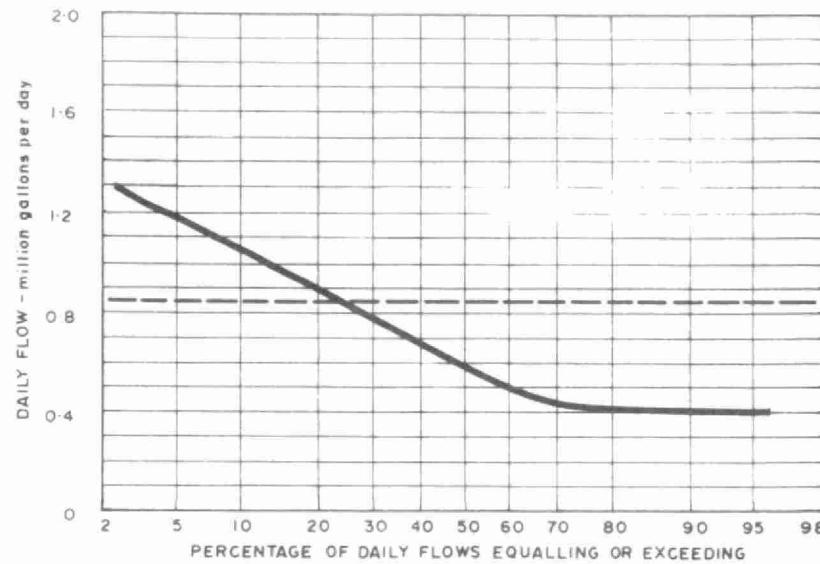
YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M G	¢/lb BOD
1974	225.5	54,361	241	27

OPERATING EXPENDITURES

Regular Staff	\$ <u>20,672</u>	\$
Casual (Unclassified) Staff	<u>239</u>	
TOTAL SALARIES AND WAGES	<u>20,911</u>	
TOTAL EMPLOYEE BENEFITS	<u>2,107</u>	
TOTAL TRANSPORTATION AND COMMUNICATIONS	<u>1,434</u>	
Insurance	<u>719</u>	
Sludge Haulage	<u>2,968</u>	
Repairs and Maintenance	<u>3,546</u>	
Other Services	<u>243</u>	
TOTAL SERVICES	<u>7,476</u>	
Machinery and Equipment	<u>2,653</u>	
Chemicals	<u>1,191</u>	
Utilities	<u>12,147</u>	
Other Supplies and Equipment	<u>5,109</u>	
TOTAL SUPPLIES AND EQUIPMENT	<u>21,100</u>	
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	<u>415</u>	
TOTAL TRANSFER PAYMENTS	<u>-</u>	
OTHER TRANSACTIONS	<u>918</u>	
GRAND TOTAL	<u>\$ 54,361</u>	

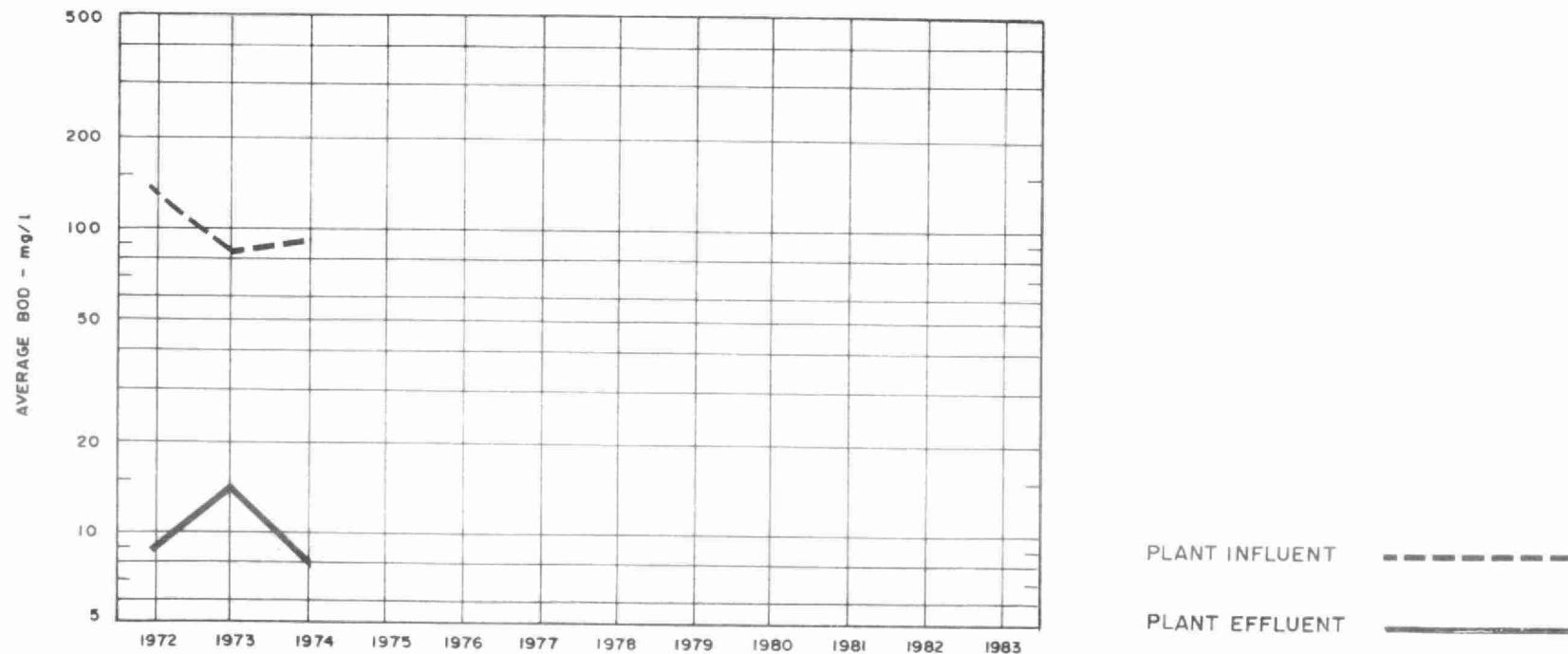
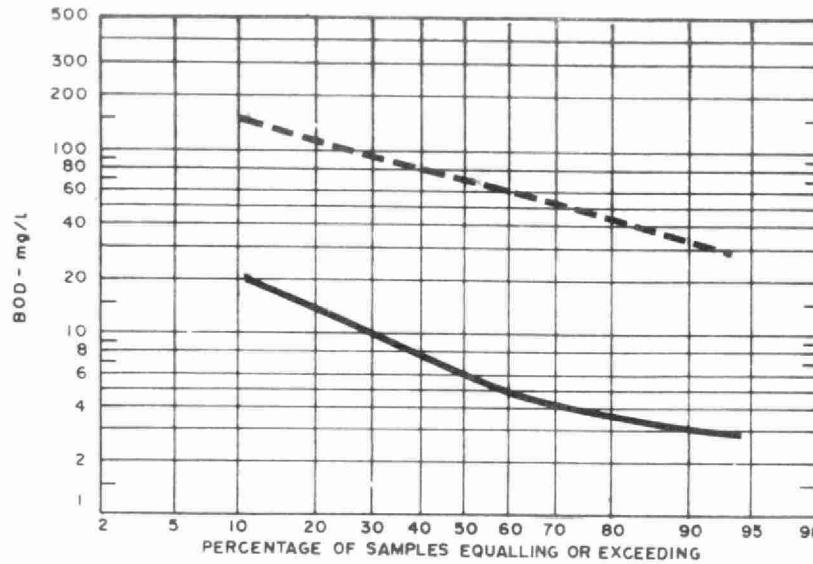
PROCESS DATA FLOWS



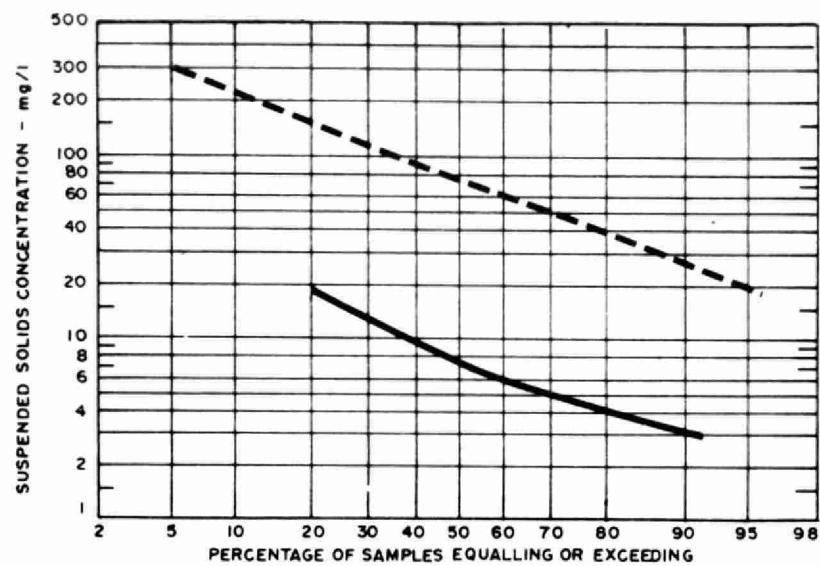
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l P	EFFLUENT mg/l P
						%	10^3 pounds			%	10^3 pounds		
JAN	23.77	.77	1.9	95	28	71	16	159	19	88	33	2.7	2.1
FEB	18.46	.66	1.1	440				78	19	76	11	2.9	
MAR	20.39	.66	1.8	60	16	73	9	138	22	84	24	7.8	3.9
APR	22.17	.74	1.5	115	10	91	23	130	17	87	25	6.9	2.9
MAY	19.44	.63	1.3					173	6	97	32		
JUNE	23.24	.77	.7	75	4	95	16	135	6	96	30	7.6	2.0
JULY	15.78	.51	.8	55	4	93	8	45	6	87	6	9.6	3.0
AUG	17.76	.57	1.0	140	6	96	24	133	5	96	23	6.7	2.2
SEPT	16.08	.54	.8	60	5	92	9	164	7	96	25	6.5	2.0
OCT	16.84	.54	1.2	32	3	91	5	39	10	74	5	3.5	1.8
NOV	17.00	.57	.9	38	3	92	6	44	4	91	7	7.2	.8
DEC	14.59	.47	.6	55	5	91	7	56	7	88	7	3.6	1.9
TOTAL	225.52	-	-	-	-	-	-	-	-	-	219	-	-
AVG.		.62	MAXIMUM 1.9	99	8	92	17	108	11	90	18	6.3	2.4
No. of Samples	-	-	-	17	16	-	-	69	67	-	-	17	16

BIOCHEMICAL OXYGEN DEMAND

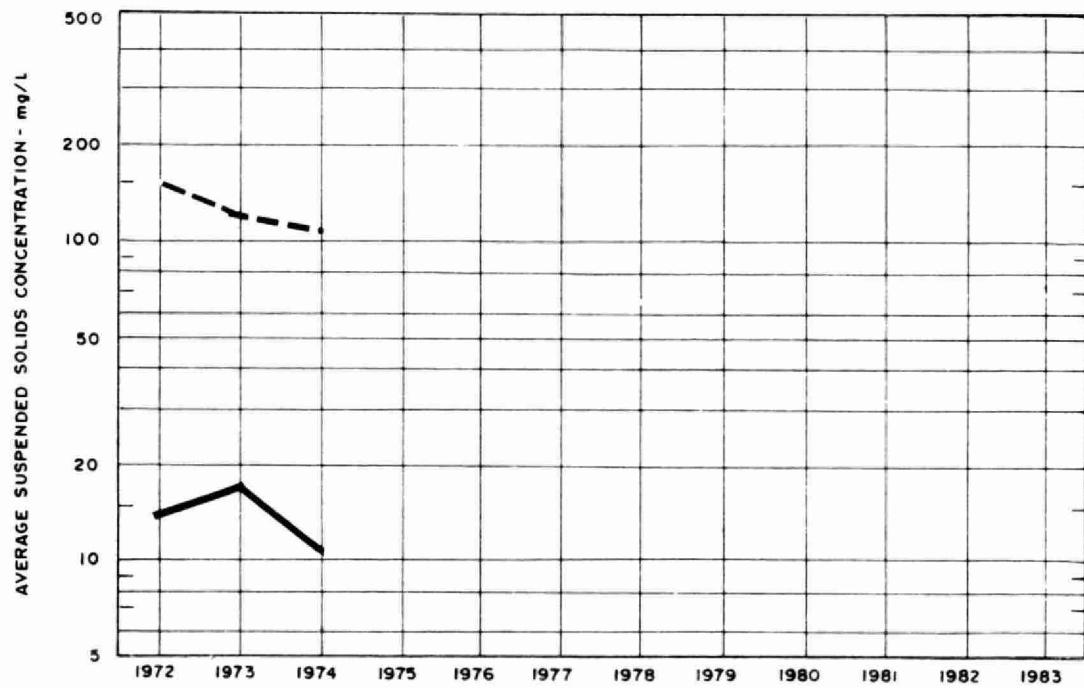


SUSPENDED SOLIDS

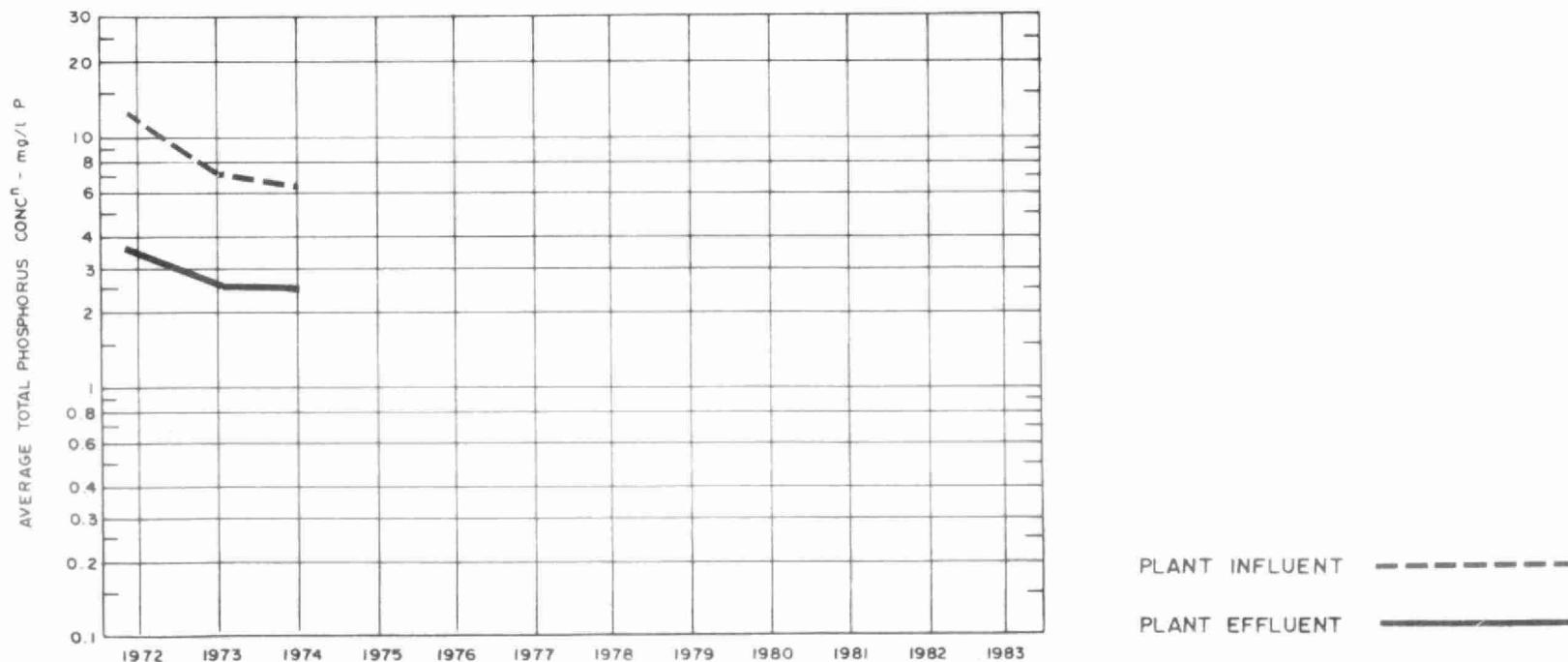
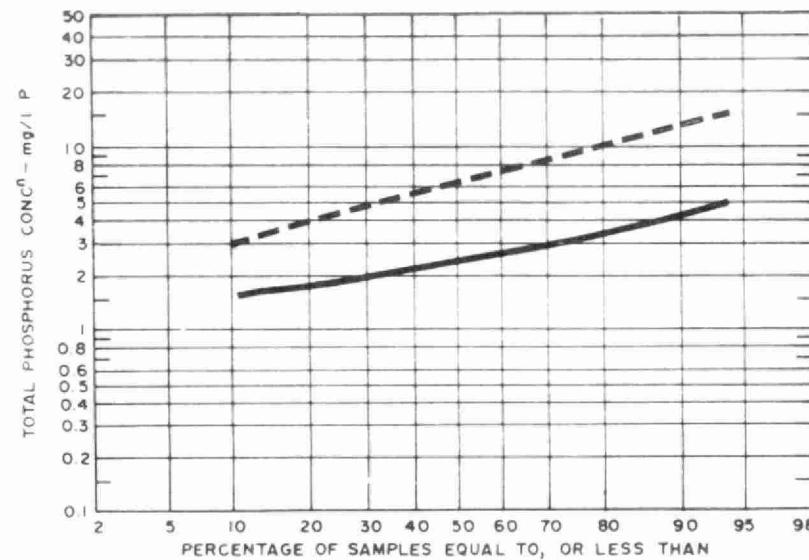


PLANT INFLUENT

PLANT EFFLUENT



PHOSPHORUS



TREATMENT DATA

MONTH	GRIT QUANTITY REMOVED cubic feet	CHLORINATION		AERATION			WASTE SLUDGE			AEROBIC DIGESTER			
		Cl ₂ USED pounds	Avg. dosage mg/l	MLSS conc mg/l	F/M day ⁻¹	AIR USED 1000 ft ³ lb BOD	QUANTITY 10 ³ gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	QUANTITY REMOVED 10 ³ gallons	SUSPENDED SOLIDS mg/l	VOL. SOLIDS %	AMOUNT HAULED cubic yards
JAN	0	619	2.6	2200	.14		0	6900	73	23.0	10200	59	138
FEB	0	443	2.4	2700	.48		1.4	6500	70	18.0	10500	60	107
MAR	0	575	2.8	2500	.07		2.6	5200	67	20.0	12000	56	120
APR	4	597	2.7	2800	.13		4.2	4800	63	25.3	15800	56	152
MAY	0	451	2.3	2200			3.4	4900	66	27.9	11700	55	166
JUNE	0	382	1.6	2700	.09		0	6900	56	91.8	16300	53	547
JULY	0	418	2.6	2000	.06		1.0	3600	61	44.3	13900	51	263
AUG	8	486	2.7	1400	.24		2.4	4500	57	54.1	11700	51	323
SEPT	0	434	2.7	2100	.07		3.1	4400	61	39.1	10700	50	232
OCT	0	447	2.7	2000	.04		2.5	5200	64	42.4	9400	52	252
NOV	3	376	2.2	2900	.03		0	6000	60	20.0	9800	51	119
DEC	0	301	2.1	1800	.06		0	3500	69	6.2	10000	51	37
TOTAL	15	5529	-	-	-	-	20.6	-	-	412.1	-	-	2456
AVG.	.07 cu. ft/mil gal	461	2.4	2300	.13			5200	64	34.3	11800	54	205

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